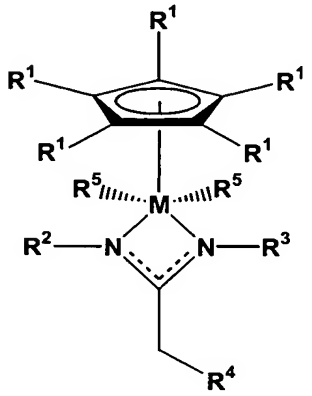
WHAT IS CLAIMED IS:

1. An olefin polymerization catalyst comprising a pre-catalyst having the formula:



wherein M is Ti, Zr or Hf;

each R^1 is independently hydrogen or alkyl or two adjacent R^1 form an aryl group;

each R^2 and R^3 is optionally substituted and is independently alkyl, cycloalkyl, SiX_3, or aryl; or

one R^1 and one of R^2 or R^3 are taken together to form an alkyl, aryl, arylalkyl or alkylarylalkyl bridge;

R^4 comprises alkyl, cycloalkyl, SiX_3, aryl, BR^6_3 or a solid support;

each R^5 is halo, optionally substituted alkyl, cycloalkyl, aryl, or arylalkyl;

R^6 is optionally substituted phenyl;

B is the element boron; and

X is independently halo, alkyl, alkoxy or aryl.

2. A catalyst composition comprising the olefin polymerization catalyst of claim 1 and a co-catalyst of the formula:

$$[A]^{\oplus}[BR^6_4]^{\ominus} \text{ or } BR^6_3$$

wherein $A^{\oplus}$ is a cationic Lewis or Brønsted acid.

3. The composition of claim 2, wherein said co-catalyst is $[PhNHMe_2][B(C_6F_5)_4]$.

4. The catalyst of claim 1, wherein said solid support is an organic polymer or inorganic oxide.

5. The catalyst of claim 4, wherein said polymer is a polystyrene, polyamide, or polysaccharide.

6. The catalyst of claim 4, wherein said inorganic oxide is a silica, alumina, titania, zirconia, or a combination thereof.

7. The catalyst of claim 1, wherein said aryl is phenyl, naphthyl, indenyl, phenanthrenyl, anthracenyl, fluorenyl, or biphenyl.

8. The catalyst of claim 1, wherein:

said optional substituents on alkyl are alkoxy, amide, aryl, alkyl, halo, ketone, ester, aldehyde, cyano and nitro; and

said optional substituents on aryl are alkoxy, amide, aryl, alkyl, halo, ketone, ester, aldehyde, cyano and nitro.

9. The catalyst of claim 1, wherein M is Zr.

10. The catalyst of claim 1, wherein each R^1 is hydrogen.

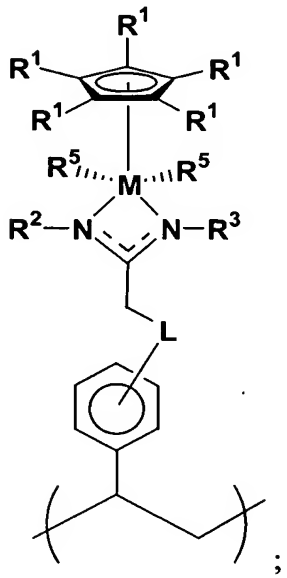
11. The catalyst of claim 1, wherein each R^1 is methyl.

12. The catalyst of claim 1, wherein said catalyst comprises about 0.1-10 mequiv/g of catalytic sites.

13. The catalyst of claim 1, wherein said pre-catalyst is a copolymer having the formula:

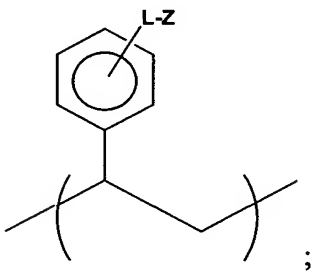
poly[A-*co*-B];

wherein unit A has the formula:



;

unit B has the formula:



;

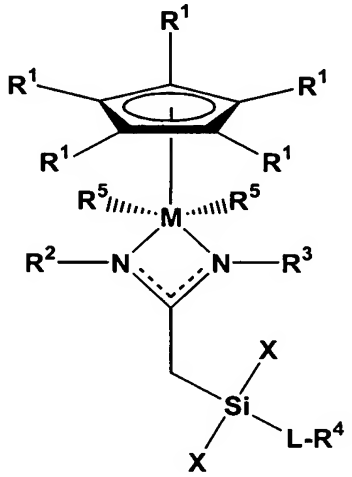
L is a linking group; and

Z is hydrogen, C_{1-3} alkyl or C_{1-3} alkoxy.

14. The catalyst of claim 13, wherein L is sulfonyl, C_{1-3} alkyl, C_{1-3} alkoxy, carbonyl or does not exist.

15. The catalyst of claim 13, wherein said unit A has a molar percentage in the range of about 50-80% and said unit B has a molar percentage in the range of about 20-50%.

16. The catalyst of claim 1, wherein said pre-catalyst has the formula:



wherein L is a linking group.

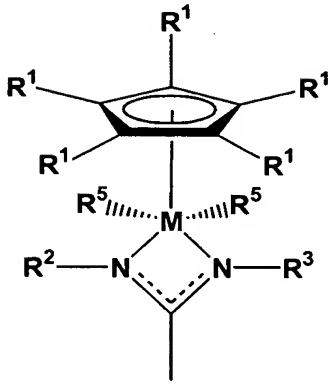
17. The catalyst of claim 16, wherein L is amino, epoxy, thio, alkyl, alkoxy or aryl.

18. The catalyst of claim 16 wherein R^4 is an inorganic oxide and L is epoxy.

19. The catalyst of claim 16, wherein said catalyst comprises about 0.1-10 mequiv/g of catalytic sites.

20. A process for preparing an olefin polymerization catalyst, comprising:

(a) deprotonating a metal acetamidinate having the formula:



wherein M is Ti, Zr or Hf;

each R^1 is independently hydrogen or alkyl or two adjacent R^1 form an aryl group;

each R^2 and R^3 is optionally substituted and is independently alkyl, cycloalkyl, SiX_3, or aryl; or

one R^1 and one of R^2 or R^3 are taken together to form an alkyl, aryl, arylalkyl or alkylarylalkyl bridge;

each R^5 is halo, optionally substituted alkyl, cycloalkyl, aryl, or arylalkyl;

X is independently halo, alkyl, alkoxy or aryl;

to form an intermediate; and

(b) contacting said intermediate with an electrophile to form a precatalyst.

21. The process of claim 20, further comprising:

(c) reacting said pre-catalyst with an activating co-catalyst.

22. The process of claim 20, wherein said electrophile is electrophilic polystyrene.

23. The process of claim 20, wherein said electrophile is chloromethyl-substituted polystyrene, sulfonyl chloride-substituted polystyrene, $B(C_6F_5)_3$ or SiX_3 ; and X is independently halo, alkyl, alkoxy or aryl.

24. The process of claim 20, further comprising after (b):

(d) reacting said precatalyst with an inorganic oxide solid support.

25. The process of claim 20, wherein said inorganic oxide is a silica, alumina, titania, zirconia, or a combination thereof.

26. The process of claim 21, wherein said co-catalyst has one of the formulae:

$$[A]^{\oplus}[BR^6_4]^{\ominus} \text{ or } BR^6_3$$

wherein $A^{\oplus}$ is a cationic Lewis or Brønsted acid;

B is the element boron; and

R^6 is optionally substituted phenyl.

27. The process of claim 26, wherein said co-catalyst is $[PhNHMe_2][B(C_6F_5)_4]$.

28. The process of claim 20, wherein M is Zr.

29. The process of claim 28, wherein each R^1 is methyl.

30. A process for preparing a polyolefin, comprising:

reacting an olefin with an activated olefin polymerization catalyst composition, under conditions that result in the formation of a polyolefin;

wherein said catalyst composition comprises the pre-catalyst of claim 1.

31. The process of claim 30, wherein said catalyst composition further comprises a co-catalyst having one of the formulae:

$$[A]^{\oplus}[BR^6_4]^{\ominus} \text{ or } BR^6_3$$

wherein $A^{\oplus}$ is a cationic Lewis or Brønsted acid.

32. The process of claim 31, wherein said co-catalyst is $[PhNHMe_2][B(C_6F_5)_4]$.

33. The process of claim 30, wherein said olefin is ethene, propene, 1-butene, 1-pentene, 1-hexene, 1-heptene, 1-octene, styrene, alpha-methyl styrene, butadiene, isoprene, acrylonitrile, methyl acrylate, methyl methacrylate, vinyl acetate, vinyl chloride, vinyl fluoride, vinylidene chloride, N-vinyl pyrrolidone, 3-methylbutene, 3-methyl-1-pentene, vinylcyclohexene, vinylcyclobutane, vinylcyclopentane, vinylcyclooctane, 1-decene, enantiomerically pure β-citronellene, 3,5,5-trimethyl-1-hexene or 4-methyl-1-pentene.

34. The process of claim 30, wherein said olefin comprises a mixture of two or more monomers having vinyl unsaturation.